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STUDY PROJECT

ATTACK HELICOPTER OPERATIONS: ART OR SCIENCE?

BY

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Attack Helicopter units provide unmatchable responsiveness to the ground commander. As a result, there is a great tendency to throw them into battle with little or no planning. This reduces attack helicopter effectiveness and increases their vulnerability. Synchronization is key to the success of attack helicopter engagements. The attack battalion commander must synchronize the effort of his helicopters with artillery, close-air support and electronic warfare measures. Synchronization rarely occurs during execution without detailed prior planning. This study outlines a process for planning an attack helicopter engagement. Mission analysis, intelligence preparation of the battlefield, threat templates, weapon's capability/vulnerability analysis and battlefield calculus are all tools that the commander can use to integrate attack helicopters and combat multipliers on the battlefield. Used together, they provide a methodology for wargaming an attack helicopter engagement to determine the best use of all the combat and combat support systems that can be brought to bear on a target. The result is a synchronization of effort in time, space, and task to produce maximum combat power.

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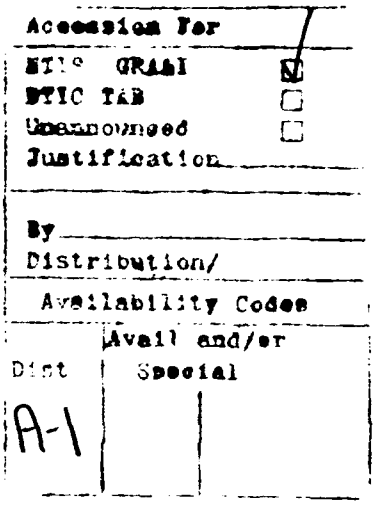

USAWC MILITARY STUDIES PROGRAM PAPER

ATTACK HELICOPTER OPERATIONS: ART OR SCIENCE?

AN INDIVIDUAL STUDY PROJECT

by

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ABSTRACT

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This study outlines a process for planning an attack helicopter engagement. Mission analysis, intelligence preparation of the battlefield, threat templates, weapon's capability/vulnerability analysis and battlefield calculus are all tools that the commander can use to integrate attack helicopters and combat multipliers on the battlefield. Used together, they provide a methodology for wargaming an attack helicopter engagement to determine the best use of all the combat and combat support systems that can be brought to bear on a target. The result is a synchronization of effort in time, space and task to produce maximun combat power.

INTRODUCTION

"Army aviation allows commanders the unparralled ability to maximize the dimensions of space and time ... (it) is not tied to terrain ... However, some of the terrain's protective advantages are forfeited ... Therefore, aerial maneuver must be fitted to the terrain as carefully as ground maneuver."1 A key strength of attack helicopter forces is their responsiveness, mobility and flexibility. As such, most aviation commanders tout their ability to get there "firstest with the mostest" and most ground commanders are quick to latch onto this capabilty as a quick panacea for immediate tactical problems. Yet, this should be the exception rather than the norm.

The effectiveness and survivability of attack helicopters on a mid to high intensity battlefield is so critically tied to their proper employment as part of a synchronized combined arms team that preplanning is an absolute must. "Effective tactical planning is the best way to assure synchronization in execution. Usually, the more effective the plan, the less synchronization will be held hostage to active command and control once operations begin."2

Though FM 1-112 (Attack Helicopter Battalion) and TRADOC TT 17-50-3 (JAAT Operations) provide excellent descriptions of coordinated execution, neither describe the planning process. Much has been written on what synchronization looks like, but little has been written on how to attain it. The recently published Corps Deep Operations Tactics, Techniques and Procedures Handbook comes the closest to providing a guide to

planners. Its' detailed description of the planning required to synchronize an attack helicopter battalion's movement to attack a target is the best treatment of this subject to-date. However, we still need a cookbook for planning the actual attack.

Since little has been written on "how to", most approaches have been more art than science; that is, more intuitive than analytical. As a result, attack helicopter engagements may not be as effective and survivable as they could be. "Spur of the moment or improvised employment of aviation assets permits neither effective planning to fit aerial maneuver to the terrain nor results in effective synchronization of ground and air activities."3 Use of a more systematic approach will greatly aid the battalion commander and his staff in planning an attack in detail.

PURPOSE

The purpose of this paper is to outline a planning process for synchronizing the attack helicopter battalion's (AHB) efforts at the engagement area. It should be viewed as a supplement to the Corps Deep Operations Handbook.

The primary problem is that there are few ideal engagement areas (EA). Many offer little opportunity for an AHB's fifteen attack helicopters to occupy battle positions (BP) that have a view of the entire target, fire missiles from multiple attack positions and then depart after destroying the target in a few minutes. The problems are what target to hit, what weapon to use, what position to use and how to sequence the attack.

A systematic method using intelligence preparation of the battlefield (IPB) and weapon's capability/vulnerability analysis provides the products for organizing the attack. IPB produces threat templates that array the target in the EA and line of sight diagrams that aid in determining the best positions from which to view the target. Weapons capability/vulnerability analysis uses probabilities of kill to determine attack helicopter (AH) effectiveness from these different positions. By combining the two processes the AHB commander can then fit the AHB to the EA and determine attack helicopter, close-air support (CAS), artillery and intelligence electronic warfare (IEW) tasks.

The model for describing this process will simulate a mission assigned to a divisional AH-1(Cobra) battalion. I have chosen this because my hypothesized probabilities should be less sensitive/controversial and for the purposes of demonstrating the process, an AH-1 battalion is more easily constrained. Some may say this is anachronistic and has very little relevancy to advanced attack helicopter battalions. I think not, because my emphasis is on the process rather than the helicopter. In my opinion, the basic principles apply to both line of sight autonomous engagements of the AH-1 and AH-64, as well as, to the remote fire capabilities of the AH-64.

SITUATION

A Mechanized Division is in the defense, has been successful in destroying the threat's attacking first echelon divisions' lead regiments and has significantly slowed their second echelon

regiments. The defense is being conducted with two ground maneuver brigades forward and one in reserve. The aviation brigade is supporting the main battle with one AHB and is keeping one in reserve with an, on-order, mission to respond to Level III rear battle threats. The division commander decides to conduct a counterattack with the reserve ground brigade (Figure 1) to complete the destruction of the second echelon regiments and to reestablish the FLOT in preparation for the threat's follow-on

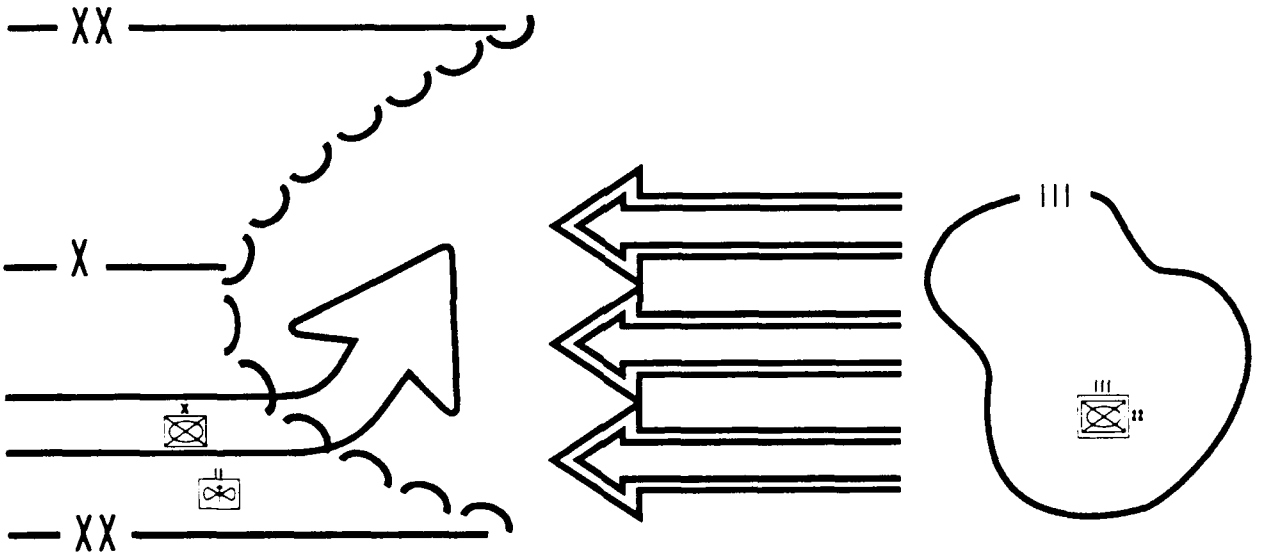


Figure 1

The new mission of the reserve AHB, reinforced with one air cavalry troop, is to guard the flank of the attacking brigade. The immediate threat to the counterattack is the 22d Independent Motorized Rifle Regiment (IMRR). There are three battalion-size avenues of approach into the right flank of the counterattacking brigade. In his guidance, the maneuver brigade commander states that he expects the AHB to destroy company and larger forces moving along the approaches. He defines destruction as 70% of a

force's combat vehicles (about 34 in a motorized rifle battalion) and warns that the AHB should be prepared to simultaneously attack forces on all three approaches.

MISSION ANALYSIS

Although, according to FM 1-112 (Attack Helicopter Battalion) an AHB can defeat a motorized rifle regiment, it becomes more difficult when the situation doesn't allow the battalion to mass its' fires against a massed regiment, but requires it to simultaneously attack the regiment's motorized rifle battalions (MRB) as they move through separate EAs. This significantly stretches the attack assets. The battalion commander must therefore, determine the minimum amount of attack helicopters needed to attack targets in each engagement area, in order to maximize his allocation of combat power.

These are the questions that must be addressed. How will the threat be arrayed in the EAs? What portions of the target can be attacked from each BP? How many AHs are needed for each target? What specific missions should be given to artillery, CAS and IEW systems? How are their targets determined? Finally, how is the attack synchronized? What are the critical timing elements? What activities must occur simultaneously and what ones must occur sequentially?

The more detailed the analysis, the more precise the estimate and the less adjustments that need to be made by the attack helicopters once they reach the battle positions. With this estimate, the battalion commander can then determine his

task organization, the missions for each attack element (AHs, artillery and CAS), what fire distribution and control measures are needed and whether to use a continuous, phased or maximum destruction employment technique.

CONCEPT DEVELOPMENT

In developing a concept, the AHB commander begins with the IPB process. Terrain and weather are analyzed and the enemy force is templated along each avenue of approach. The integration of this analysis leads to selection of named areas of interest (NAI) and target areas of interest (TAI).

NAIs are spots on the ground where the enemy commander must make a maneuver decision and thus give us an indication of his intentions. These spots must be observed with some type of sensor (HUMINT, SIGINT or ELINT) to either confirm or deny our templating of the IMRR's movement along the avenues of approach. They can also become trigger points for moving the attack companies into position.

TAIs become engagement areas. They should be large enough to hold the enemy force and should contain natural or manmade obstacles that will cannalize and restrict its' movements. There should also be good overwatching terrain for masked BPs with good fields of fire. Ideally, the entire EA should be observed from each BP, but this rarely occurs. Thus, kill zones must be designated in the EA for each BP and care must be taken to ensure that they cover all possible deployments of the templated force as it moves through the EA.

Kill zones, BPs and routes to and from these positions should be attack helicopter company (AHC) size. Sometimes only team positions can be found. Groups of team positions are then designated as company BPs. Finally, each BP should be large enough to provide multiple attack positions for each helicopter. Rarely should an AH fire a second missile from the same attack position. The more precise the analysis, the more likely that attack crews will find good attack positions on arriving in a BP and the less likely that companies will need to make significant BP adjustments during the attack.

INTELLIGENCE PREPARATION OF THE BATTLEFIELD

There are three primary avenues of approach into the flank of the brigade (Figure 2). Although a force no larger than a battalion could move along each avenue, the three routes allow the regiment's MRBs to simultaneously attack the brigade.

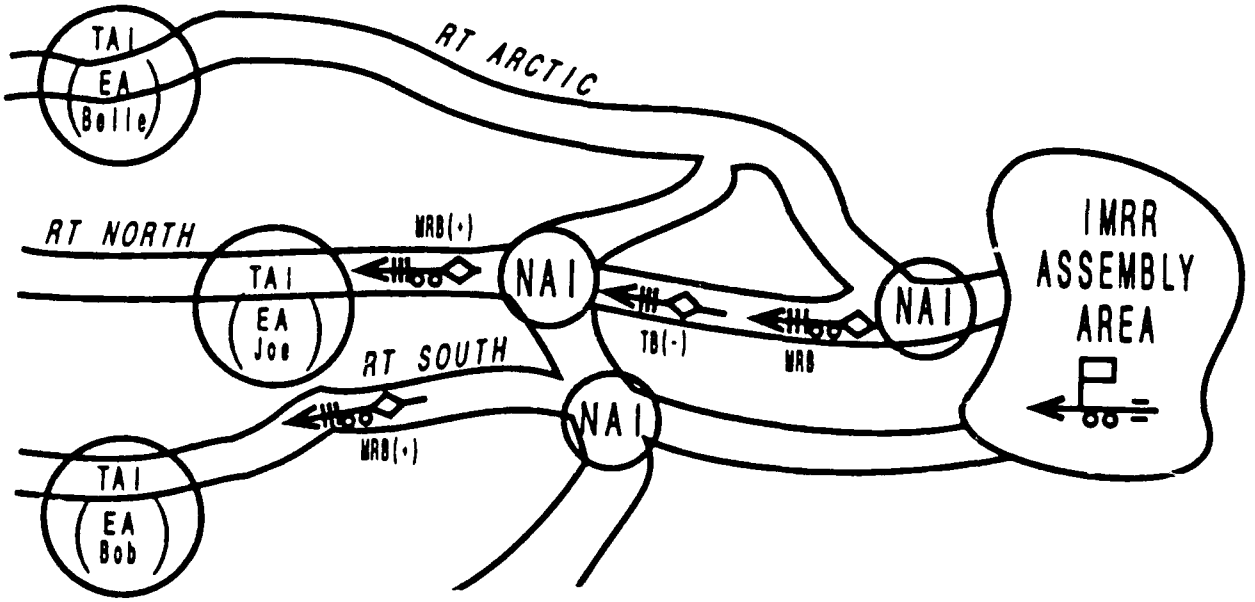


FIGURE 2

Route North is the best and most direct, while Route South is a close second. Route Arctic is the least likely approach. Indications are that the IMRR will probably move to the counterattack on Routes North and South. The brigade S-2 believes that two MRBs will march in column on Route North while one MRB will move along Route South. Since North is the main avenue of approach, the Regimental Command Post, a tank battalion (-), and other support elements will also move with the two MRBs.

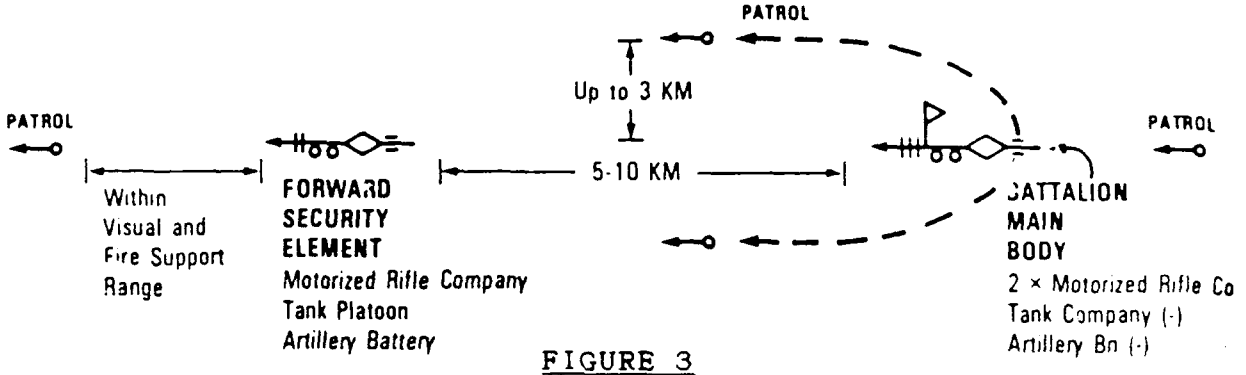


FIGURE 3

The lead battalion on each route will be in an advance guard formation (Figure 3). Doctrinally, each advance guard has three motorized rifle companies (MRC), a mortar battery, an antiaircraft platoon and is reinforced with a tank company and an artillery battalion. One MRC is a forward security element (FSE) that is reinforced with a tank platoon. It travels five to ten kilometers forward of the main body. The FSE has nine infantry carriers (BMP) and four tanks. The advance guard's remaining twenty-seven BMPs and nine tanks travel with the main body. Total combat maneuver vehicles in each advance guard are thirteen tanks and thirty-six BMPs. The MRB trailing behind the advance guard on Route North has fourteen tanks and thirty-six BMPs. This accounts for the regiments 148 combat maneuver vehicles.4

The engagement areas along each route are not the typical massive open bowls normally portrayed. Even though they are open, folds in the terrain create intervisibility problems that will affect target acquisition and engagement. This dictates that the attack consist of simultaneous engagements by companies/teams from multiple directions. The problem is how to array them.

The AHB must destroy 103 combat maneuver vehicles to meet the brigade commanders 70% destruction requirement (Figure 4). The fog and friction of war will make the antitank guided missiles (ATGM) less than 100% effective. Assuming an average probability of kill (pk) rate of 70% indicates that the AHB may need to fire 146 missiles to destroy 103 targets..

	Total Vehicles		Destruction Criteria		Kills Required		AVG. PK		ATGMs Required
North	99	x	.70	=	69	/	.70	=	98
South	49	x	.70	=	34	/	.70	=	48
Total	148	x	.70	=	103	/	.70	=	146

FIGURE 4

Figure 5 depicts the number of ATGMs available in an AHB.

TEAM		# of AHs		ATGMs
LIGHT		2		8
HEAVY		+ 3 (5)		+ 24 (40)
COMPANY TOTAL	=	5 (5)		32 (40)
		x 3		x 3
BATTALION TOTAL	=	15		96

( ) = Heavy configuration 8 missiles per AH.

FIGURE 5

At a 70% effectiveness rate, an AHB, that can carry only ninety-six missiles, would need to make two trips to the EA.

BATTLEFIELD CALCULUS

No system is 100% effective. Planners account for this by assuming that there will be failures. To this point a 70% missile success rate has been used. Many factors influence pk (range, position, weather, obscurants, error and equipment faults).

The AHB commander can influence most of these factors to some degree. Before the battle, he can enhance pk with good maintenance and training. During the battle, it can be increased with reduced ranges and rear or flank shots. AHs gain a great deal of passive protection from extended ranges, therefore firing at reduced ranges is normally not acceptable for increasing pk. Changing the angle of attack is. Figure 6 shows the relationship between shot perspective, pk and passive protection. Frontal shots with their low pk require more missiles and increase the AHs vulnerability, while rear and flank shots reduce vulnerability, increase pk and thus require less missiles.

PROBABILITY OF KILL

	RANGE		
	3500	2000	1000
FRONTAL	50(-)	70(-)	90(-)
FLANK	70(+)	90(-)	100(-)
REAR	90(+)	100(-)	100(-)

Note: All PKs are hypothetical & for illustration only

(-) = AH vulnerable (+) = AH least vulnerable

FIGURE 6

By applying this concept to the attack on Route South, the AHB commander further defines the number of AHs required. The AHB must destroy thirty-four vehicles on this route. Attaining the average pk (Figure 7) means that the AHB may need, at least, forty-eight missiles to destroy thirty-four vehicles.

Kills Required		AVG. PK		ATGMs Required
34	/	.70	=	48

Figure 7

Attaching two heavy AHs to an AHC, for a total of seven AHs provides sufficient missiles (32+16=48). The larger force however, is coming on Route North and it may be very difficult to divert two additional AHs from that attack. Reducing the number of AHs required by increasing missile effectiveness may be a more feasible option.

WARGAMING

A rough calculation indicated that seven heavy AHs may be needed on Route South. Wargaming the fight by BP will further refine this number. Figure 8 depicts the results of templating the MRB as it moves along South.

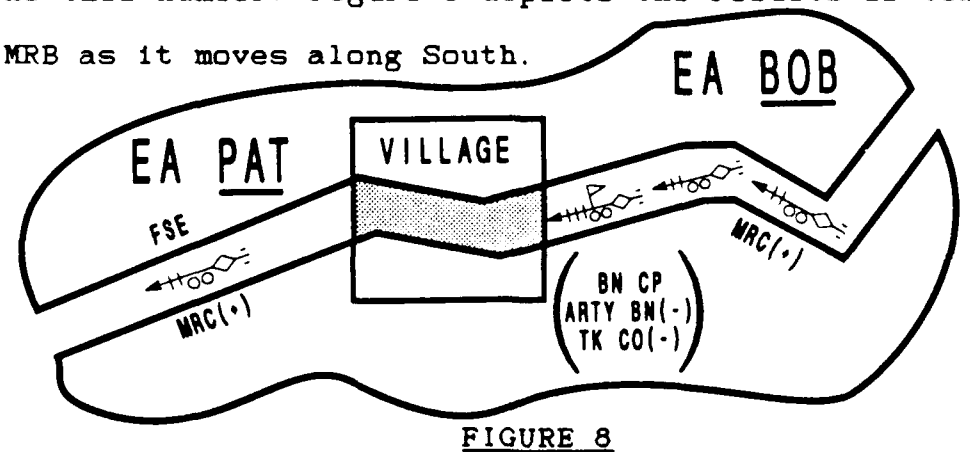


FIGURE 8

Although, no single EA is large enough to accommodate the entire MRB, EA Pat provides a good place to attack the FSE and EA Bob provides the best opportunity to attack the main body. The template shows the FSE exiting a village and deploying into Pat as the trail elements of the main body enter Bob.

Analysis of line of sight is critical to choosing BPs. It is vital for determining the suitability for covering kill zones and for determining what masking is provided by each BP. This capability and vulnerability analysis will reveal what portion of the enemy force can be fired on from each BP and what portion of the enemy force can observe into each BP. Techniques to determine this include map reconnaissance, computer assisted line of sight templates and visual reconnaissance. A combination of all three is the best, but time and location of the EA will dictate which can be used.

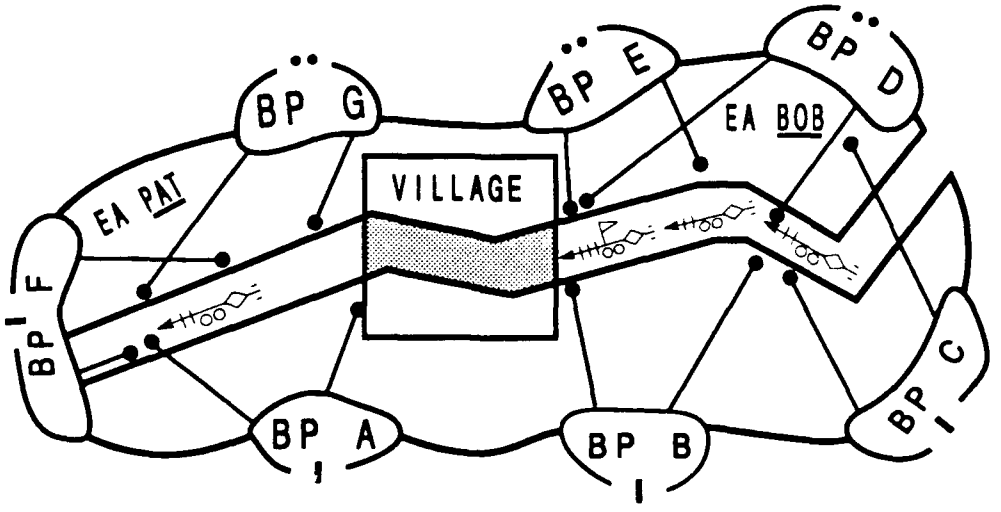


Figure 9

Multiple BPs (Figure 9) have been found around the EAs, but the line of sight analysis indicates that BPs A, B and C are the best company-size positions. BP A is suitable for a flanking shot

at the FSE and is masked from observation and direct fire from the main body. BP B offers good flank shots at the entire main body. BP C provides rear shots and the best opportunity for suprise, however only a limited portion of the EA can be observed from this position.

By templating the force and using the line of sight analysis, we now have an idea how many vehicles may be exposed in each battle position's kill zone. Applying the destruction criteria and PK for each BP further defines how many missiles and ultimately, how many AHs are needed. Figure 10 depicts the results of this wargaming analysis.

	Vehicles Exposed		Destruction Criteria		Kills Required		Position's PK		ATGMs Required	AHs Rqr'd
BP A	14	x	.70	=	10	/	.70	Note 1	14	2
BP B	21	x	.70	=	15	/	.70	Note 1	21	3
BP C	14	x	.70	=	10	/	.90	Note 2	11	2
								Total =	46	7

Note 1 Hypothesized PK for a flank shot at 3500 meters

2 Hypothesized PK for a rear shot at 3500 meters

Figure 10

Although analysis by battle position indicates that two less missiles (46 vice 48) are needed, it also reconfirms that seven AHs are still needed for a simultaneous attack from all three BPs. There are three options for reducing the number of AHs.

Reconfigure the light AHs into heavys (i.e. more missiles per company), attack the MRB sequentially versus simultaneously and look for battle positions that have a higher PK (better chance of success with fewer missiles).

As shown earlier (Figure 5), an AHC, by converting its' light team to a heavy configuration and adding one more AH, can carry forty-eight missiles. Six heavy AHs, attacking the target sequentially, can carry enough missiles to guarantee a high probability of success at each BP.

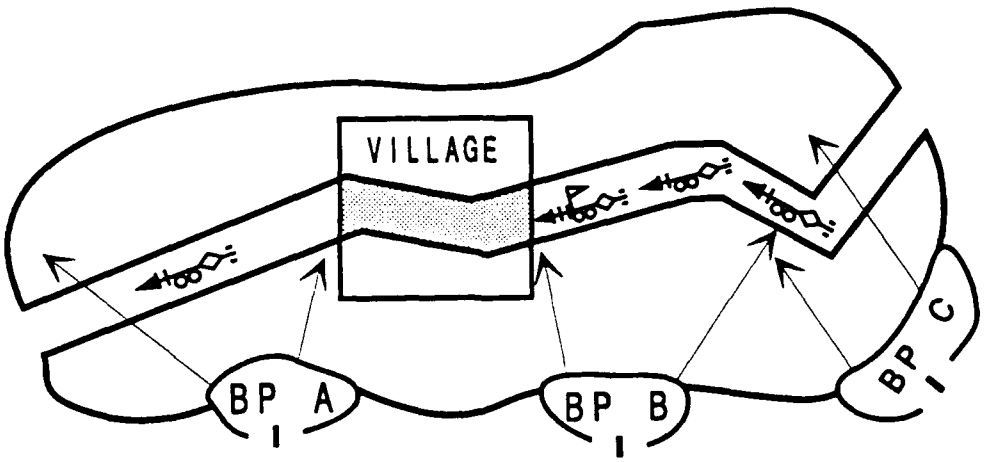


Figure 11

Courses of action (COA) for a sequential attack are to initially attack with three AHs each in BPs A and B (Figure 11) and then shift the six to C. Another COA would be to attack with four AHs in A and two in C and then move all six to B. Finally, six AHs could attack from A, then four could move to B and two to C. Figure 12 depicts the results of wargaming each of these options.

COA One

	BP	# AHs	ATGMS Available		ATGMs Required		ATGMs Remaining
Phase 1	A	3	24	-	14	=	10
	B	3	24	-	21	=	3
Phase 2	C	6	13	-	11	=	2

COA Two

Phase 1	A	4	32	-	14	=	18
	C	2	16	-	11	=	5
Phase 2	B	6	23	-	21	=	2

COA Three

Phase 1	A	6	48	-	14	=	34
Phase 2	B	4	23	-	21	=	2
	C	2	11	-	11	=	0

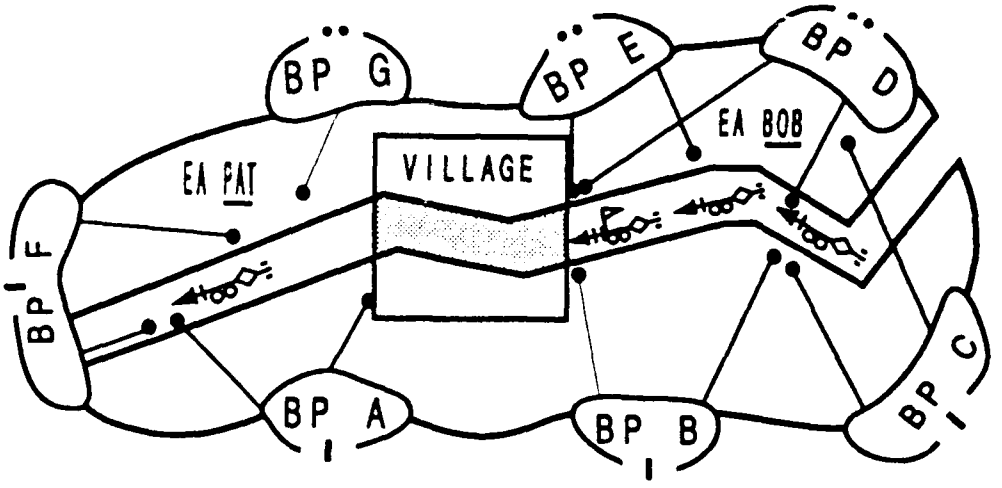
Figure 12

Each COA provides sufficient missiles to destroy the anticipated targets for each BP and ends with two surplus missiles. COA 2 and 3 seem to be the best concepts because they position these surplus missiles in the BP that will probably have the most targets. All three COAs however, still require six AHs.

Taking Advantage of PK

Despite reconfiguring to eight missiles per aircraft and attacking the target sequentially, six AHs are still needed to

achieve a high probability of success. The only options left for reducing the number of AHs is to find BPs with higher probabilities of success and to make use of other combat systems to destroy the targets. The initial analysis of EA Bob indicated that the best company-size BPs were on the southern side, however there were several team BPs with higher PKs on the northern side. BP D (Figure 13) provides a good rear shot of the entire main body for three AHs. Figure 13 compares the use of BP D instead of B for attacking the forward elements of the main body.



BP	Kills Rqr'd		BP's PK		ATGMs Rqr'd
B	15	/	.70	=	21
D	15	/	.90	=	-17
			Savings		4

Figure 13

Four fewer missiles are needed when BP D rather than B is used. That is, the AHC needs to carry forty-two instead of forty-six missiles. An AHC, with five heavy AHs (40 missiles), is within two missiles of satisfying our planning requirement.

Figure 14 depicts a new COA using five instead of six AHs.

COA Four

	BP	# AHs	ATGMS Available		ATGMs Required		ATGMs Remaining
Phase 1	A	5	40	-	14	=	26
Phase 2	C	2	10	-	11	=	(-1)
	D	3	16	-	17	=	(-1)

Figure 14

Reconfiguring the aircraft, sequencing the attack and using the BPs with the highest probabilities of kill have brought the AHB to within two missiles of accomplishing the mission with one company of five AHs. Combat multipliers can overcome this shortfall, but before determining their tasks and integrating them into a COA, the AHB commander must consider one more element; timing.

Timing

Up to now, the discussion has dealt primarily with how positioning around the engagement area optimizes effectiveness. Timing also has a major impact. Successful integration of artillery, close air support and electronic warfare systems with attack helicopters is dependent on the AHB commander's detailed understanding of the attack's timing requirements.

It takes time to fire a missile. The AH must move into position, the target must be acquired, the firing sequence must be executed, the missile must fly to the target and then the AH

must reposition for another shot. This, not only, affects time on station and vulnerability, but must be understood to properly sequence the attack. Figure 15 is a suggested planning standard.

Activity	Seconds
Move Into Position	15
Unmask	10
Acquire & Fire	5
AVG. Flight Time	16
Remask	5
Move To Next Position	60
Total	111 = 1.8 minutes

Figure 15

In practice, many factors will cause a standard engagement time to vary. Its' use in planning however, allows the commander to estimate how different numbers of AHs affect time on station and to formulate a sequence of events. Figure 16 (next page) is an analysis of each COA by time. Estimating the amount of time spent in each BP gives the AHB commander an indication as to when the AHs will become most vulnerable and how best to sequence in combat systems to assist in the attack and/or protect the force.

COA One

	BP	ATGMs Fired		# AHs		ATGMs Fired/ AH (Rounded)		Time/ AH		TIME/ BP	TOT. TIME
Phase 1	A	14	/	3	=	5	x	1.8	=	9.0	
	B	21	/	3	=	7	x	1.8	=	12.6	> 16.2
Phase 2	C	11	/	6	=	2	x	1.8	=	3.6	

COA Two

Phase 1	A	14	/	4	=	4	x	1.8	=	7.2	
	C	11	/	2	=	6	x	1.8	=	10.8	> 18.0
Phase 2	B	21	/	6	=	4	x	1.8	=	7.2	

COA Three

Phase 1	A	14	/	6	=	3	x	1.8	=	5.4	
Phase 2	B	21	/	4	=	6	x	1.8	=	10.8	> 16.2
	C	11	/	2	=	6	x	1.8	=	10.8	

COA FOUR

Phase 1	A	14	/	5	=	3	x	1.8	=	5.4	
Phase 2	C	10	/	2	=	5	x	1.8	=	9.0	> 14.5
	D	16	/	3	=	5	x	1.8	=	9.0	

Figure 16

Total engagement time has a significant influence on the vulnerability of AHs during the attack. The longer the attack, the more susceptible they are to direct and indirect fire. Ideally, the AHB commander reduces this time by massing the

battalion for one quick strike. This mission doesn't allow it, therefore a course of action should be chosen that minimizes exposure time.

COA four requires the fewest number of missiles and has the shortest exposure time (14.5 min.). Reduced time on station and optimization of missile effectiveness makes it the best choice.

The concept is now formed. An AHC will reconfigure to eight missiles per AH and sequentially attack the MRB using BPs A, C and D. The MRB has been templated, specific targets have been identified in each BP's kill zone, AHs have been allocated to each BP, shortfalls have been identified and an initial time sequence has been developed. Armed with this information the AHB commander can now more effectively assign tasks to the combat multipliers available to him.

Combat Multipliers

Artillery, CAS and IEW enhance the operation. Their capabilities allow them to complement rather than replace the AHs. Although some mission overlapping is appropriate, as a contingency for breakdowns, the AHs and combat multipliers, for the most part, have separate and distinct tasks.

The best approach for determining how to use a multiplier is to evaluate the COA's shortcomings. First, a SEAD plan is needed to deal with the primary threat of three BMP-2s from the MRB's air defense platoon and, at least, two SA-13s and two ZSU 23-4s from the IMRR's air defense battery. Second, the sequential attack is dependent on containing the main body in EA Bob. If the

main body reacts too quickly to the attack on the FSE, large parts of it could be through the killing zone before the AHs arrive at their second BPs. The main body must be slowed down and contained. Third, the length of phase two allows the threat artillery to become increasingly effective in the latter stages of the attack. It must be suppressed/neutralized. Finally, the AHC does not have enough missiles to ensure mission success and it may need some help in destroying the primary targets.

Artillery

Artillery can increase the effectiveness of the attack with scatterable mines (FASCAM) and smoke to isolate, slow and canalize the target, high explosives to suppress or neutralize soft/area targets and Copperhead missiles to destroy point targets. Planning considerations are that artillery is most effective at neutralizing soft unprotected air defense and artillery systems. Use Copperhead to destroy tanks. Firing FASCAM is time consuming and smoke can obscure the target. Finally, it can take two to five minutes to shift from one target/mission to the next. The more time spent shifting around the engagement area, the less time rounds are falling on the target, therefore it is better to assign a fewer number of tasks that the artillery can do well.

In COA four, artillery can suppress air defense and artillery systems, canalize the main body and destroy tanks or BMPs. All four missions can be mutually excluding if not properly integrated into the attack. Once again, wargaming will reveal how

to best fit these tasks into the overall scheme.

The IMRR's air defense systems pose the greatest threat during the initial stages of the attack, therefore SEAD will receive priority in phase one. FASCAM must also be fired during this phase to slow down the main body and hold it in EA BOB until phase two. FASCAM and smoke will be emplaced just ahead of the main body before it exits EA BOB. It should be fired concurrently with the attack on EA PAT to divert the main body's attention and slow its' reaction. Phase one priorities are suppression of identified air defense threats and the FASCAM/smoke mission.

Although air defense systems will be a significant threat in the earliest stages of phase two, artillery will become predominant and decisive after the first two to three minutes. According to FM 100-2-1 (Soviet Army Operations and Tactics), it takes about five minutes for a threat artillery battalion to react and put effective fires on a 600 x 600 meter area (@ one BP) and then two minutes to shift those fires to another BP.5 Phase two is nine minutes long and therefore, the priority for artillery in phase two should be counter-battery fires. In addition, if some AHs are lost during phase one, the AHC may also need to fire Copperhead to destroy some tanks or BMPS.

In the final fire support plan priority of fires in phase one goes to SEAD and FASCAM, while in phase two it will be counter-battery, SEAD and Copperhead missions. SEAD will be conducted as preplanned and immediate suppression missions. An OH-58D will be provided to, initially, conduct fire missions against ADA in EA PAT, while one aero-scout will overwatch BOB to

coordinate the FASCAM mission and send calls for fire on ADA in BOB. In phase two the OH58-D will move to EA BOB and continue to concentrate on air defense, however calls for fire against identified artillery batteries will take priority. If necessary, the OH-58D, at the direction of the AHC commander, will conduct Copperhead missions. In this way, the AHB commander makes the best use of artillery to separate the advance guard, slow down and destroy some combat vehicles and suppress/neutralize the most significant air defense threats.

Close Air Support

For planning purposes, the AHB has been allocated three A-10 missions. Two missions will have two aircraft in each, while the third will have four. Close air support provides the AHB an additional asset to destroy the combat vehicles. The A-10 can destroy targets with its' 30mm cannon or precision guided missiles. In a high threat area, guided missiles are normally chosen for their stand-off capability. Each A-10 can be expected to fire two missiles into the engagement area. This translates to sixteen fired missiles. At a hypothesized pk of 90% the A-10s should get fourteen kills.

According to our calculations for COA 4, the AHC needed at least two more missiles. Two A-10s should give the AHC, at least, three (4 x .90 = 3.6) more kills. It appears that one mission will be sufficient for the attack on Route South. Factors to be considered are the amount of lead time to get the A-10s on target? What targets will the A-10s be most effective against?

Are these the same targets that the AHs are not effective against? When are the A-10s most vulnerable to ADA? The answers to these questions will lead to the best use of them.

Using the A-10s during phase one has several drawbacks. Lead time will be shorter, the target will be smaller and minimal ADA will have been suppressed. For the most part, these disadvantages will be minimized during phase two. In addition, the largest and highest payoff target that the A-10s will be most effective against is the tank company (-) in the main body. It appears therefore, that the A-10s will be least vulnerable and most effective during the second phase. The target chosen for them is the tank platoon traveling with the lead company in the main body. This aids the team in BP D that may not have enough missiles and increases the possibility of destroying the tank company commander who should be traveling with this platoon..

IEW Operations

IEW operations provide the AHB commander with the combat information and intelligence to plan and conduct the attack, disrupt the IMRR and protect the friendly force. Initial efforts will focus on tracking the IMRR and other targets (ADA & artillery) that may affect the AHB's mission. The aviation brigade and AHB S-2's must work closely with the division G-2 to develop a collection and surveillance plan. The ultimate objective of getting the AHB on target on time will drive the initial priority intelligence requirements.

Protecting the force defines the IEW priority of effort

during the attack. Electronic support measures (jamming & direction finding) should be targeted against the element/s whose disruption will have the most significant impact on the destruction of the target and protection of the force. Obvious choices are jamming of IMRR command and control, air defense and fire support frequencies, while direction finding can be used to support the SEAD and counter-battery efforts. IEW assets are limited, therefore these missions must be prioritized.

Prioritizing the effort will then ensure that electronic combat support measures are directed to the areas where the AHB needs the most help. In this case, the greatest aid to the destruction of the target is the protection of the force from enemy ADA and artillery. The priority of effort in phase one should then go to identification, targeting and jamming of the low and high altitude air defense systems while the priority should shift to the threat artillery batteries in phase two.

THE CONCEPT

A concept of operation has evolved from the analysis. Using a systematic approach to study all the parts of the engagement revealed complementary and supplementary tasks for each system.

One company of five helicopters, armed with eight missiles each, will attack the MRB traveling on Route South. The AHC's mission is to attack company and larger formations and destroy at least thirty-four of the MRB's combat vehicles.

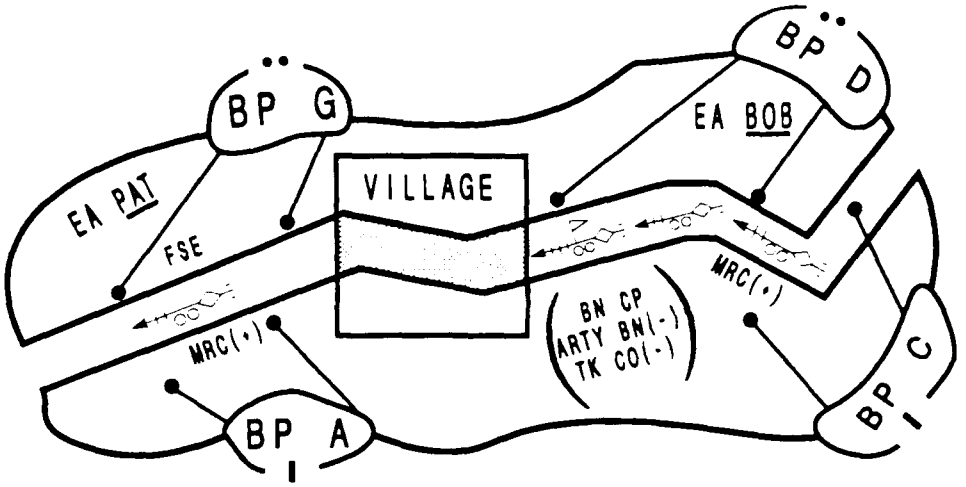


Figure 17

Initially, five AHs will attack the FSE in EA PAT (Figure 17) from BP A to destroy at least ten vehicles. At this point the artillery priorities will be placing FASCAM and smoke east of the village and suppression of identified air defense systems. During this phase IEW will concentrate on jamming air defense and artillery systems and finding the artillery batteries in support of the MRB. To reduce the risk from threat artillery, three AHs, after firing two missiles, will move from BP A to BP G to complete their engagements. Phase one should end with at least ten FSE vehicles destroyed, the main body stalled east of the village with at least one to two vehicles destroyed by FASCAM and five AHs moving to BPs C and D with at least thirty-two missiles.

Phase two finds three AHs attacking the second MRC from BP D and two others attacking the trail MRC from BP C. By this point, IEW should have had some success at finding the threat artillery. Our artillery will now concentrate on counter-battery fires and SEAD. The CAS, by this time, should be holding at their initial point. The AHC commander will bring in the A-10s once identified ADA has been suppressed and when the OH-58D is ready to lase the four lead tanks. This phase should end with the second MRC losing at least fifteen vehicles and the trail MRC losing ten.

Criteria for success is the AHC destroying thirty-three vehicles, the CAS destroying three and the artillery destroying at least two. If each weapon acheives the minimun, then at least thirty-eight vehicles will be destroyed; four more than required. Not only is the brigade commander's criteria met, but sufficient redundancy is achieved to allow mission success without CAS or with the loss of one AH during phase two.

Figure 18 is a depiction of a play card that is used to control/adjust the fight.

ATTACK INTO AA PAT AND BOB

	SEQ	SYS	BP	AA	TGT	MSL	TGT	TGT
	(H-/+)					Fired	Time	Dest
Phase	(-15.0)	IEV	-	PAT/BOB	ADA/ARTY	(Continuous)		
ONE	(-5.0)	ARTY	-	BOB	Main Body	(FASCAM)	15.0	2
					SEAD	(As Identified)		
	(H)	5AH	A	PAT	FSE	12	5.4	8
	(+3.6)	2AH	O	PAT	FSE(-)	2	1.8	2
	(+5.4)	IEV	-	BOB	ARTY/ADA	(Continuous)		
		ARTY	-	BOB	SEAD	First 5.0		
	**	2AH	C	BOB	Trail MRC	10	9.0	9
Phase	**	3AH	D	BOB	Lead MRC(+)	16	9.0	14
TWO	(+7.2)	CAS	-	BOB	CEN TK PLT	4	5.0	3
	(+10.0)	ARTY			CNTRFIRE	(Post CAS)		
	(+14.5)	5AH --- EGRESS						
	(+15.5	ARTY --- MISSION COMPLETE						
		IEV ---- MISSION COMPLETE						
		Alternate BPs						
		5AH	F	PAT	FSE	14	5.4	7
		3AH	B	BOB	Lead MRC(+)	16	9.0	11
		3AH	E	BOB	Lead MRC(+)	16	9.0	11

Figure 18

The play card is the commander's vision of the attack. It not only helps him sequence the attack, but, also, provides a basis for sound modification to the plan. Armed with the above information he knows the size of the BP, what can be engaged from

each BP, how many missiles are needed and how long it will take. Planning has given the AHB commander greater flexibility.

CONCLUSION

Our analysis has provided a concept for the attack on Route South. The same process is now applied to the attack on Route North. The AHB commander has husbanded his resources to ensure sufficient combat assets are available for that attack. It should be kept in mind that, ideally, the AHB would attack in mass on each EA. I have specfically constrained it to demonstrate the process and the planning that is required whether the attack is by five or fifteen helicopters.

The CINC, USAEUR recently wrote that army aviation " is not an "Oh My God" force to be called upon in times of crisis, or a support asset to be added as an afterthought. Intelligence preparation of the battlefield, rehearsal and trigger points will be crucial to integrate and synchronize attack helicopters properly.".6

I have attempted to outline a process for planning attack helicopter engagements. Despite the fact that I have used formulas and calculations to demonstrate the planning process, it is not a scientfic approach. Rather, it is a way of breaking the mission down into its' parts. I have merely quantified a thought process. It will not guarantee success, but it will give an edge to attack helicopter units. It provides a play book and a vision of the battle for the attack unit commander. The attack won't go exactly as he wargamed it, but, at least, he has something that

he can adjust from. In this case planning aids flexibility in execution.

By going through this process, the attack unit commander has totally familiarized himself with the engagement area, battle positions, kill zones, threat force, as well as, the capabilities and vulnerabilities of all the weapons that he can bring to bear. He not only has an understanding of how he can fight the battle, but, more importantly, his level of understanding of the terrain and enemy and friendly forces will enable him to make effective adjustments as the attack plays out.

Some may argue that they'll never be time to do all this for every engagement. That's probably true and, on those occasions where time is of the essence, shortcuts will have to be taken. However, a commander, that trains himself and his staff to look at attacks in this way, will then be able to pick and choose through the process to make even ad hoc missions more effective. Shortcuts should be the exception rather than the rule and the greater the risk the more care must be given to the planning. The knocking out of the Iraqi early warning radar by eight AH-64s to kick off the Desert Storm air war is an excellent example of relying on detailed planning at the critical time to ensure flawless execution.

General Saint says it best, "Technology has multiplied combat power such that a new wrinkle appears. The new issue is can the Commander's mind and his tools keep up with the tools of his trade? Forces out of synchronization are forces that will fight alone and may be defeated piecemeal".7

ENDNOTES

1. U.S. Department of the Army, Field Manual 100-1, p. 1-14.

2. U.S. Department of the Army, Field Manual 100-5, p. 35.

3. FM 1-100, p. 3-2.

4. U.S. Department of the Army, Field Manual 100-2-1, p. 5-4.

5. Ibid., p. 9-25.

6. Crosbie E. Saint, "Central Europe Battlefield 2000: the Combat Helicopter," ARMY AVIATION, 31 January 1991, p. 6.

7. Ibid.

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